

Product Advantages

One of the Smallest 6-axis Sensors in the World: The Nano25 fits into restricted spaces of research applications.

Extremely High Strength:

- EDM wire-cut from high yield-strength stainless steel.
- Maximum allowable single-axis overload values are 7.1 to 15.1 times rated capacities.

High Signal-to-Noise Ratio: Silicon strain gages provide a signal 75 times stronger than conventional foil gages. This signal is amplified, resulting in near-zero noise distortion.

IP65 and IP68 (4m) Versions Available: The IP65 version of the transducer is available for use in wet environments. The IP68 version is for underwater environments to a maximum depth of 4 meters in fresh water. Contact ATI Industrial Automation for drawings and more information.



The Nano25 F/T transducer

The transducer is made of hardened stainless steel with integral interface plates made from high-strength stainless steel.

Typical Applications

- Telerobotics
- Robotic surgery
- Robotic hand research
- Finger-force research

ENGLISH CALIBRATIONS	SENSING RANGES		Calibrations			
	Axes		US-25-25		US-50-50	
	Fx, Fy (\pm lbf)		25		50	
	Fz (\pm lbf)		100		200	
	Tx, Ty (\pm lbf-in)		25		50	
	Tz (\pm lbf-in)		25		30	
	RESOLUTION		System Type*			
	Axes		CTL	Net/DAQ	CTL	Net/DAQ
	Fx, Fy (lbf)		1/112	1/224	1/56	1/112
	Fz (lbf)		3/112	3/224	3/56	3/112
Tx, Ty (lbf-in)		1/80	1/160	1/40	1/80	
Tz (lbf-in)		1/160	1/320	1/80	1/160	

METRIC CALIBRATIONS	SENSING RANGES		Calibrations			
	Axes		SI-125-3		SI-250-6	
	Fx, Fy (\pm N)		125		250	
	Fz (\pm N)		500		1000	
	Tx, Ty (\pm Nm)		3		6	
	Tz (\pm Nm)		3		3.4	
	RESOLUTION		System Type*			
	Axes		CTL	Net/DAQ	CTL	Net/DAQ
	Fx, Fy (N)		1/24	1/48	1/12	1/24
	Fz (N)		1/8	1/16	1/4	1/8
Tx, Ty (Nm)		1/660	1/1320	1/330	1/660	
Tz (Nm)		1/1320	1/2640	1/660	1/1320	

*CTL: Controller F/T System; Net: Net F/T System; DAQ: 16-bit DAQ F/T System. The resolution is typical for most applications and can be improved with filtering. Resolutions quoted are the effective resolution after dropping four counts of noise (Net/DAQ) or eight counts of noise (CTL). All sensors calibrated by ATI. **Applied loads must be within range in each of the six axes for the F/T sensor to measure correctly** (refer to the transducer manual for complex loading information).

Single-Axis Overload	English	Metric
Fxy	±520 lbf	±2300 N
Fz	±1600 lbf	±7300 N
Txy	±380 lbf-in	±43 Nm
Tz	±560 lbf-in	±63 Nm
Stiffness (Calculated)	English	Metric
X-axis & Y-axis force (Kx, Ky)	3.0x10 ⁵ lb/in	5.3x10 ⁷ N/m
Z-axis force (Kz)	6.3x10 ⁵ lb/in	1.1x10 ⁸ N/m
X-axis & Y-axis torque (Ktx, Kty)	5.7x10 ⁴ lbf-in/rad	6.5x10 ³ Nm/rad
Z-axis torque (Ktz)	8.1x10 ⁴ lbf-in/rad	9.2x10 ³ Nm/rad
Resonant Frequency (Non-IP rated, Measured)		
Fx, Fy, Tz	3600 Hz	
Fz, Tx, Ty	3800 Hz	
Physical Specifications	English	Metric
Weight*	0.14 lb	63 g
Diameter*	0.984 in	25 mm
Height*	0.85 in	21.6 mm

*Specifications are for non-IP rated models. Diameter excludes any connector or cable features.

“The forcetorque systems from ATI are ideal in our study of human grip force coordination and production. They are as close to a turn-key system as we have found.”

Professor Jay L. Alberts
Dept. of Exercise Science
and Physical Education
Arizona State University

Note:

Applying moments beyond ±30 lbf-in (±3.4 Nm) in Tz can cause hysteresis and permanent zero-point change in the Nano25.

